IN THE SPECIFICATION

Please enter the following amendments to the specification according to the instruction below to replace paragraphs. Another version of these replacement paragraphs, which is enclosed with this amendment on separate pages, is marked up to show all the changes relative to the previous version of the paragraphs.

1. Please replace the paragraph beginning at page 2 line 23 and ending at page 3 line 5 with the following paragraph.

sub B1

B1

A further interferometric solution makes use of the interferometric properties of etalons, i. e. plane parallel plates of glass or fused quartz with reflecting surfaces. Due to the interference at the surfaces within the etalon, the light beam transmitted through the etalon exhibits a wavelength dependent transmission characteristics, generally showing a sine or cosine shape. As disclosed in EP-A-875743, the wavelength resolution can be significantly improved by combining two etalons with different phase dependencies on the wavelength. By providing a phase shift (in particular of n/2) between the two curves, the problem of the ambiguous turn points in the sine- or cosine-like shapes can be avoided and a tangent relationship on the wavelength can be achieved. Instead of using two separated etalon elements, one birefringent element can be provided in combination with corresponding polarizing elements. Since the resulting transmission-over-wavelength characteristic is ~~not~~ unambiguous due to the periodicity of the curves, main applications are finetuning of variable laser sources, whereby the wavelength location is already roughly known and can therefor be assigned to a corresponding period of the curve.

2. Please replace the paragraph beginning at page 3 line 25 and ending at page 4 line 3 with the following paragraph.

B2

A wavemeter according to the invention for determining the wavelength of an incoming optical beam comprises a coarse-measuring unit and a fine-measuring unit. The coarse-

measuring unit allows for unambiguously determining the wavelength of the incoming optical beam over a first wavelength range. The fine-measuring unit provides an ambiguous wavelength determination for the incoming optical beam, however with a higher accuracy than the accuracy of the coarse-measuring unit. Although the wavelength determination of the fine-measuring unit is ambiguous within the first wavelength range (e. g. since it provides a periodic wavelength dependency), it is provided to be unambiguous in each of a plurality of unambiguous wavelength ranges, whereby each of the plurality of unambiguous wavelength ranges is smaller than the first wavelength range.

B2 cont

3. Please replace the paragraph beginning at page 7 line 21 and ending at page 7 line 23 with the following paragraph.

B3

The necessity of calibration generally depends on the wavelength stability and/or wavelength characteristics of the coarse-measuring unit and/or the fine-measuring unit, which may be influenced by temperature, mechanical shock or aging.

4. Please replace the paragraph beginning at page 7 line 25 and ending at page 7 line 29 with the following paragraph.

B4

Thus, the invention provides a wavemeter allowing to assign with a higher precision and accuracy a wavelength to an incident light beam. The applicable wavelength range of the wavemeter can be adjusted by selecting or designing the wavelength-dependencies of the coarse-measuring unit and/or the fine-measuring unit.

5. Please replace the paragraph beginning at page 8 line 20 and ending at page 8 line 21 with the following paragraph.

B5

Figure 3 depicts an example of a wavelength-dependency of the fine-measuring unit 200.

6. Please replace the paragraph beginning at page 5 line 9 and ending at page 9 line 15 with the following paragraph.

B6

Suitable materials, e. g. for providing a wavelength-dependency of a coating, can be for example MgF2, SiO, or CeF3. Preferred embodiments of the coarse-measuring unit are dielectric filters, wherein the reflectivity-and transmission-characteristics changes unambiguously within the wavelength range of interest. Dual detectors, wherein the incoming beam is split up and provided to detectors with different response characteristics over the wavelengths can be applied accordingly.

7. Please replace the paragraph beginning at page 8 line 8 and ending at page 8 line 12 with the following paragraph.

B7

Other objects and many of the attendant advantages of the present invention will be readily appreciated and become better understood by reference to the following detailed description when considered in connection with the accompanied drawings. Features that are substantially or functionally equal or similar will be referred to with the same reference sign(s).

8. Please replace the paragraph beginning at page 8 line 25 and ending at page 9 line 11 with the following paragraph.

B8

Figure 1 shows a preferred embodiment of a wavemeter 50 according to the invention. An incident light beam 100 is split by a first beam splitter 110 into beams 110A and 110B. The beam 110A is then again split up by a second beam splitter 120 into beams 120A and 120B. The beam 120A is directed towards a coarse-measuring unit 130 consisting of a third beam splitter 140 and two detectors 150A and 150B. The third beam splitter 140 splits up beam 120A into a beam 140A towards the detector 150A and a beam 140B directed towards the detector 150B. Either the third beam splitter 140 or the two detectors 150A and 150B comprise materials with a wavelength-dependency of the characteristics. Preferably, the third beam splitter 140 provides a coupling-ratio between

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the beams 140A and 140B which is dependent on the wavelengths. In a preferred embodiment, the coarse-measuring unit 130 comprises a glass plate with a dielectric coating (PRC) on one side and an anti-reflection coating (ARC)on the other side, thus providing a wavelength dependent beamsplitter (WDBS). The PRC has a high wavelength-dependent reflection-/transmission-characteristics, and the ARC is optimized for minimum reflection to avoid light disturbances coming from the second surface falsifying the PRC transmission and reflection characteristic. The beams 140A and 140B separated by the WDBS are launched to the two detectors 150A and 150B (e. g. photodiodes) for measuring the characteristic properties, such as reflection and/or transmission, of the PRC.

9. Please replace the paragraph beginning at page 9 line 13 and ending at page 9 line 20 with the following paragraph.

B9

Figure 2 shows an example of a wavelength-dependency of the coupling ratio between the beams 140A and 140B of the third beam splitter 140. The third beam splitter 140 exhibits a transmission characteristics T, which increases from roughly 5% at 1500nm to 98% at 1600nm, and a reflection characteristics R, which decreases from roughly 95% at 1500nm to 2% at 1600nm. It is clear that T+R =1 has to be fulfilled in the ideal case. In this example, the (applicable) range of the wavelength λ is selected to cover approximately 1500-1600nm as the currently applied 'telecommunication window'.

10. Please replace the paragraph beginning at page 12 line 28 and ending at page 13 line 7 with the following paragraph.

B10

The wavemeter 50 can be calibrated as described above, and the coarse-measuring unit 130 may be also calibrated with the absolute-measuring unit 300 as often as necessary according to the stability of the coarse-measuring unit 300. If an unknown signal (input beam 100) is launched into the wavemeter 50, the respective power values P_λ are measured with the photodiodes150A, 150B, 230A, and 230B of the coarse-and fine-measuring units 130 and 200, and received by the evaluation unit 350. In the simplest

B10 Cont

way, these power values P_λ are used by the evaluation unit 350 applying a searching algorithm to find the corresponding λ-value in pre-defined look-up tables. Between the calibrated values, the unknown wavelength may be determined by interpolation algorithm. These described controlling mechanism software may also be running on an external PC software. The λ-value is then output at output 360.

11. Please replace the paragraph beginning at page 9 line 22 and ending at page 10 line 2 with the following paragraph.

B11

The beam 120B from the second beam splitter 120 is directed towards a fine measuring unit 200. The fine-measuring unit 200 applies the principle of interferometry for determining the wavelengths of the beam 120B. The fine measuring unit 200 might comprise a single etalon element or two etalon elements in combination, both as described in the aforementioned EP-A-875743. Alternatively and as shown by the example of Fig. 1, a single birefringent element 210, e. g. a λ/8 retardation plate, in combination with a respective polarizing beam splitter 220 can be applied accordingly, as also disclosed in detail in the aforementioned EP-A-875743. In this case, one birefringent quartz plate 210 fulfils the functions of two etalons, wherein the corresponding transmission signals are separated spatially. This optical component has two major optical axes, which are different in optical thickness, and the signal separation is done based on orthogonal states of polarization. Light from the polarizing beam splitter 220 is split up into a beam 220A launched to a detector 230A, and into a beam 220B launched to a detector 230B.

12. Please replace the paragraph beginning at page 10 line 4 and ending at page 10 line 11 with the following paragraph.

B12

Figure 3 depicts an example of a wavelength-dependency of the fine-measuring unit 200, which substantially represents a tangent relationship for a determined value λ over the wavelength (cf. also Figs. 6 and 7 and the accompanying description of the aforementioned EP-A-875743 which shall be incorporated herein by reference). For the

B12 Cond

sake of simplicity, only a part of the wavelength-dependency is shown in Fig. 3. It is clear that the accuracy of the tangent relationship over the wavelength depends on the specific arrangement and wavelength properties of the components of the fine-measuring unit 200.

13. Please replace the paragraph beginning at page 10 line 33 and ending at page 11 line 3 with the following paragraph.

B13

Accordingly, the evaluation unit 350 receives measuring signals from the two detectors 230A and 230B of the fine-measuring unit 200, and determines therefrom the corresponding λ-value. Due to the ambiguity of the wavelength dependency, the determined λ-value will generally correspond to a plurality of different wavelength values.

14. Please replace the paragraph beginning at page 11 line 24 and ending at page 11 line 28 with the following paragraph.

B14

In an example in conjunction with Fig. 3, the evaluation unit 350 determines a λ-value of π/2, which corresponds to wavelength values of 1552,5nm, 1562,5nm, and 1572,5nm (or in general 1552,5nm plus /minus multiple FSR). The first wavelength value as determined by the coarse unit 130 shall in this example be 1559nm.

15. Please replace the paragraph beginning at page 13 line 9 and ending at page 13 line 19 with the following paragraph.

B15

In another operation mode, the input signal of beam 100 is swept over a larger wavelength range, and e. g. a part of it is separated to characterize the transmission parameter (e. g. insertion loss) of an optical component (not shown). The power values P_λ measured with the wavemeter 50 are measured at the same time as the parameter of the optical component by use of a (not shown) trigger-unit. The corresponding λ-value may be calculated by the evaluation unit 350 during or after the sweep. Depending on the

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trigger-unit, an absolute high-accuracy wavelength measurement of the parameter under test is possible. If the absolutely known transmission features of the absolute-measuring unit 300 is within the wavelength range of the wavelength sweep, the coarse-measuring unit 130 can also be recalibrated afterwards.

16. Please replace the paragraph beginning at page 1 line 19 and ending at page 1 line 24 with the following paragraph.

B 16

A first general principle for determining the optical wavelength makes use of changes in the characteristic properties of some materials in dependency of the wavelength. DE-A-3929845 discloses a dual detector with at least two detectors with different spectral sensitivity and a computer for determining the incident light wavelength from the photocurrent difference or ratio. A similar dual detector is disclosed in DE-A-3030210.

17. Please replace the paragraph beginning at page 2 line 23 and ending at page 3 line 5 with the following paragraph.

B17

A further interferometric solution makes use of the interferometric properties of etalons, i. e. plane parallel plates of glass or fused quartz with reflecting surfaces. Due to the interference at the surfaces within the etalon, the light beam transmitted through the etalon exhibits a wavelength dependent transmission characteristics, generally showing a sinus or cosines shape. As disclosed in EP-A-875743, the wavelength resolution can be significantly improved by combining two etalons with different phase dependencies on the wavelength. By providing a phase shift (in particular of n/2) between the two curves, the problem of the ambiguous turn points in the sinus-or cosines-like shapes can be avoided and a tangent relationship on the wavelength can be achieved. Instead of using two separated etalon elements, one birefringent element can be provided in combination with corresponding polarizing elements. Since the resulting transmission-over-wavelength characteristic is not unambiguous due to the periodicity of the curves, main applications are fine-tuning of variable laser sources, whereby the wavelength location is

already roughly known and can therefor be assigned to a corresponding period of the curve.

18. Please replace the paragraph beginning at page 3 line 12 and ending at page 3 line 18 with the following paragraph.

US-A-4,864,578 (Proffitt) discloses a scannable laser with integral wavemeter. The wavemeter comprises a fine wavelength read-out based on an ambiguous interferometric wavelength determination, and a course wavelength read-out making use of optically active quartz crystals. The amount of polarization rotation is measured as a sample light beam passes along its axis, and this is correlated to the wavelength of the light beam. Both wavelength read-outs are then utilized to determine the wavelength of the incoming light beam.